Z.I. Major

Before the FEDERAL COMMUNICATIONS COMMISSION Washington, D.C. 20554

In the Matter of		www. 186
Amendment of Parts 25, 74, 78, 90, and 101 of the Commission's Rules to Facilitate Fixed Point-to-Point Terrestrial Microwave Radio Service Licensee Use of the 23 GHz and 10 GHz Bands and to Eliminate Certain Inconsistencies in Such Rules.))))	RETAIL OF A SECRET OF THE SECR

To: The Commission

PETITION FOR RULEMAKING

FIXED POINT-TO-POINT COMMUNICATIONS SECTION, WIRELESS COMMUNICATIONS DIVISION, TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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SUMMARY

Fixed point-to-point terrestrial microwave radio services ("FS") support emerging wireless technologies and essential public services. Unfortunately, spectrum to support these FS is being lost. Systematically FS users are being removed from the 2 GHz band to clear spectrum for emerging technologies, including personal communications services and Mobile Satellite-Services. Promised replacement spectrum in the 6 GHz, 11 GHz, 18 GHz (Le., 17.7-19.7 GHz), and other bands generally remain unusable due to acute congestion and increased Fixed Service-Satellite band sharing.

Potential limited relief from this spectrum shortage fortunately exists. The 21.2-23.6 GHz band (the "23 GHz Band"), which is shared by federal government and non-governmental entities, is allocated for FS use and is suitable for medium or high capacity, short range systems. Unfortunately, availability of the 23 GHz Band for FS has been restricted significantly. Excessive delay in the coordination and application process associated with government sharing, outmoded channel plans, and inappropriate operating criteria, have made this band unattractive for FS licensees.

The Fixed Point-to-Point Communications Section, Wireless Communications Division, Telecommunications Industry Association ("TIA Fixed Section"), has a solution to this problem. Immediate increased spectrum availability, through adoption of conditional licensing in the 23 GHz Band, would minimize FS user relocation and congestion difficulties. Other 23 GHz Band technical changes, including rechannelization, modified spectrum efficiency/frequency tolerance criteria, and relaxed antenna standards also would increase FS use

For the foregoing reasons, the TIA Fixed Section hereby petitions the Commission to revise Parts 25, 74, 78, 90 and 101 of its rules. To facilitate FS licensee use of the 23 GHz Band, the TIA Fixed Section herein requests that the Commission amend its rules to:

- Permit conditional licensing in the 23 GHz Band according to the following general criteria:
 - Frequencies are prior coordinated between private sector FS operators and Federal Government agencies through submission of prior coordination notices ("PCNs") to the Interdepartment Radio Advisory Committee ("IRAC").
 - Consistent with the Commission's Section 101.103(d) coordination procedures, government agencies would be required to respond to a PCN within 30 days or coordination would be deemed complete.
 - Conditional licensing is prohibited only in the protected zone around specified Federal Government facilities.
- Rechannelize the 23 GHz Band into 50, 40, 30, 20, 10, 5, and 2.5 MHz bandwidth channels.
- Permit Common Carrier and Private Operational Fixed users to share the entire 23 GHz Band
- Designate 200 MHz of spectrum for low power, limited coverage systems in the 23 GHz Band
- ♦ Change the frequency tolerance for the 23 GHz Band to 0.001%.
- ♦ Simplify the regulations in the 23 GHz Band.
- Require spectrum efficiency of one bit-per-second per Hertz ("1 bps/Hz") for the 23 GHz Band.
- Modify the antenna standards to allow: (i) 18-inch diameter high performance antennas under the Category A standard and 1-foot diameter antennas under the Category B standard in the 23 GHz

Band; and (ii) 2-foot diameter high performance antennas under the Category A standard and 4-foot diameter antennas under the Category B standard in the 10 GHz Band.

In addition, to update various provisions in Parts 25, 74, 78, 90, and 101, the

TIA Fixed Section requests that the Commission:

- ♦ Make minor corrections to the Table of Maximum Authorized Bandwidth in Part 101, Subparts C and J.
- ♦ Eliminate obsolete references to Parts 21 and 94.
- ♦ Permit digital modulation in the 1.990-2.110 GHz, 2.450-2.4835 GHz, 6.875-7.125 GHz and 12.7-13.25 GHz bands for Part 74 Television Broadcast Auxiliary Service.
- ♦ Permit Automatic Transmit Power Control and change maximum Equivalent Isotropic Radiated Power limits for short microwave paths in the Television Broadcast Auxiliary Service.

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To: The Commission

PETITION FOR RULEMAKING

Fixed point-to-point terrestrial microwave radio services ("FS") support emerging wireless technologies and essential public services. Health and safety providers, local exchange carriers, Competitive Access Providers ("CAPS"), cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and federal, state and local governments all rely upon FS networks to support their operations. These users have made FS the medium of choice because it is the most reliable, cost-effective, flexible, and terrain-insensitive technology available.

Spectrum to support these FS is being diluted. To make room for other services, FS users have become virtual gypsies. They systematically are being evicted from the 2 GHz band to clear spectrum for emerging technologies, including personal

communications services ("PCS")¹ and Mobile Satellite-Services ("MSS").² Promised replacement spectrum in the 6 GHz, 11 GHz, 18 GHz (i.e., 17.7-19.7 GHz, referenced hereinafter as the "18 GHz Band"), and other bands generally remain unusable due to acute congestion and increased Fixed Service-Satellite ("FSS") band sharing.

Potential limited relief from this spectrum shortage fortunately exists. The 21.2-23.6 GHz band (the "23 GHz Band"), which is shared by federal government and non-governmental entities, is allocated for FS use and is suitable for medium or high capacity, short range systems. Unfortunately, FS access to this band has been stymied. Excessive delay in the coordination and application process associated with government sharing, outmoded channel plans, and inappropriate operating criteria, have made this band unattractive.

The Fixed Point-to-Point Communications Section, Wireless Communications

Division, Telecommunications Industry Association ("TIA Fixed Section"), has a

¹Amendment of the Commission's Rules to Establish New Personal Communications Services, Second Report and Order, 8 FCC Rcd 7700 (1993).

²Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, First Report and Order and Further Notice of Proposed Rule Making, 12 FCC Rcd 7388 (1997) ("MSS Order").

³The Telecommunications Industry Association ("TIA") is the principal industry association representing all telecommunications equipment manufacturers, including manufacturers of FS equipment. Members of the TIA Fixed Section serve, among others, companies, including telephone carriers, utilities, railroads, state and local governments, and cellular carriers, licensed by the Commission to use private and common carrier bands for provision of important and essential telecommunications services. Sometimes, a product-oriented division or a section of such a division within TIA will file in a proceeding representing the views of only the members of that division or section. This Petition for Rulemaking ("Petition") is specifically from the TIA

solution to this gridlock. Immediate increased spectrum availability, through adoption of conditional licensing in the 23 GHz Band, would establish a safe harbor for FS users by significantly minimizing their relocation and congestion difficulties.⁴ Other 23 GHz Band technical changes, including rechannelization, modified spectrum efficiency/frequency tolerance criteria, and relaxed antenna standards⁵ also would increase FS use.

For the foregoing reasons, the TIA Fixed Section hereby petitions the Commission to revise Parts 25, 74, 78, 90 and 101 of its rules. As described below and as detailed in Appendix A, "Analysis of the Proposed FCC Rules," to facilitate FS

Fixed Section.

⁴In addition to making the 23 GHz Band more accessible, the TIA Fixed Section urges the Commission to open the 10.55-10.68 GHz band (the "10 GHz Band") to FS systems. These systems use the 10 GHz Band for low capacity, medium range applications. The 10 GHz Band was one of the Commission's designated replacement bands for FS users relocated to clear spectrum for PCS. Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies (Emerging Technologies), Second Report and Order, 8 FCC Rcd 6495, 6507-10 (1993). The Commission has taken a significant and welcome step towards making the 10 GHz Band more accessible as it has agreed on coordination issues with the National Telecommunications and Information Administration ("NTIA") and has issued a decision permitting 10 GHz Band conditional licensing. Reorganization and Revision of Part 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Order, WT Dkt. No. 94-148 (DA 98-349, released Feb. 24, 1998) ("10 GHz Band Order") The TIA Fixed Section enthusiastically supports such action.

⁵Similar changes also are proposed herein for 10 GHz Band antennas.

licensee use of the 23 GHz Band, the TIA Fixed Section herein requests that the Commission amend its rules⁶ to:

- Permit conditional licensing in the 23 GHz Band according to the following general criteria:
 - Frequencies are prior coordinated between private sector FS operators and Federal Government agencies through submission of prior coordination notices ("PCNs") to the Interdepartment Radio Advisory Committee ("IRAC").
 - Consistent with the Commission's Section 101.103(d) procedures, government agencies would be required to respond to a PCN within 30 days or coordination would be deemed complete.
 - Conditional licensing is prohibited only in the protected zone around specified Federal Government facilities.
- Rechannelize the 23 GHz Band into 50, 40, 30, 20, 10, 5, and 2.5 MHz bandwidth channels.
- Permit Common Carrier ("CC") and Private Operational Fixed ("POFS") users to share the entire 23 GHz Band.
- Designate 200 MHz of spectrum for low power, limited coverage systems in the 23 GHz Band
- ♦ Change the frequency tolerance for the 23 GHz Band to 0.001%.
- ♦ Simplify the regulations in the 23 GHz Band.
- Require spectrum efficiency of one bit-per-second per Hertz ("1 bps/Hz") for the 23 GHz Band.

⁶Text of the proposed rule changes is set forth in Appendix B - Proposed FCC Rules. A disc containing text of these proposed changes will be provided to Commission staff.

⁷The Commission and NTIA acknowledge that 23 GHz Band conditional licensing should be addressed. <u>10 GHz Band Order</u> at ¶ 4 n.7.

Modify the antenna standards to allow: (i) 18-inch diameter high performance antennas under the Category A standard and 1-foot diameter antennas under the Category B standard in the 23 GHz Band; and (ii) 2-foot diameter high performance antennas under the Category A standard and 4-foot diameter antennas under the Category B standard in the 10 GHz Band.

In addition, to update various provisions in Parts 25, 74, 78, 90, and 101, the TIA Fixed Section requests that the Commission:

- ♦ Make minor corrections to the Table of Maximum Authorized Bandwidth in Part 101, Subparts C and J.
- ♦ Fliminate obsolete references to Parts 21 and 94.
- Permit digital modulation in the 1.990-2.110 GHz, 2.450-2.4835 GHz, 6.875-7.125 GHz and 12.7-13.25 GHz bands for Part 74 Television Broadcast Auxiliary Service.
- Permit Automatic Transmit Power Control ("ATPC") and change maximum Equivalent Isotropic Radiated Power ("EIRP") limits for short microwave paths in the Television Broadcast Auxiliary Service.8

I. THE TIA FIXED SECTION'S PROPOSED RULE CHANGES SERVE THE PUBLIC INTEREST

A. FS Users Provide Valuable Services That Must Be Protected.

It is well-established that FS users serve the public interest. For example, in a recent decision, the Commission set forth an extensive menu of existing valuable FS:

In addition to providing support for existing services (e.g., broadband PCS, cellular, and other commercial and private mobile radio operations), [FS] providers ... satisfy [or plan to satisfy] needs for a host of other ... services, such as: (1) wireless local

⁸To ensure that existing systems are not treated unfairly and that manufacturers have adequate time for meeting these new standards, the TIA Fixed Section proposes transition and grandfathering requirements. <u>See</u> footnote 23, <u>infra</u>.

loops, (2) call termination or origination services to long distance companies, (3) connection of the customers of a competitive access provider ("CAP") or a local exchange carrier ("LEC") to its fiber rings, (4) connection and interconnection services to private networks operated by business and government as well as other institutions, (5) Internet access, and (6) cable headend applications.⁹

In addition, public health and safety users, as well as utilities, railroads and petroleum companies, also depend upon reliable and available FS frequencies. Specific examples of how FS serves the public are:

- ♦ Cellular and PCS cell interconnects to MTSOs and the PSTN (also used for network congestion relief).
- University, corporate, and state and local government roofmounted FS radios carry local area network traffic between buildings in a campus environment or in industrial clusters.
- Petroleum industry short-haul microwave communications. These FS communications frequently serve as spurs off long-haul microwave systems.
 - A pipeline utilizes FS paths for its long-haul transmissions and for links (or spurs) from the pipeline to a field office, refinery, central production facility, or city gate. As a result, these spurs form an integral part of the overall production, refining and transportation process and are involved in every phase of that process from extraction through processing to the actual delivery of petroleum or natural gas to the consumer.
 - In times of crisis, these communications facilities play a vital role in alerting public safety officials, in coordinating

⁹Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands: Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz, Report and Order and Second Notice of Proposed Rule Making, 12 FCC Rcd 18600, 18607 (1997) (footnote omitted).

response activities, and in minimizing the impact of emergencies upon workers and the general public. These are significant public safety attributes of petroleum and natural gas communications systems.

• If a pipeline is operating at an excessive level of pressure at one point along the pipeline, the FS communications systems are capable of monitoring this level, detecting abnormalities, and responding by remotely controlling the valve system throughout tens of thousands of miles of pipeline in the United States. Information from Supervisory Control and Data Acquisition systems, common throughout the industry, is transmitted over these microwave systems. Without this reliable information, the likelihood of pipeline ruptures, with their attendant health and environmental consequences, would be increased dramatically.

♦ Utilities use FS links for:

- protective relaying monitoring and isolating faults on the nation's interconnected electric grid within milliseconds, in order to prevent cascading blackouts impacting tens of millions of people;
- communicating critical operational information between nuclear plants, power substations and central control facilities;
- remote monitoring and controlling pipeline pressure and flow:
- monitoring and controlling water and water quality; and
- remote operation of emergency flood control systems.
- ♦ CAPs use FS links for local distribution networks to bypass local telephone companies.
- LMDS systems will use FS links for a transport infrastructure.

- Public safety providers use FS to support their operations (e.g., medical information services).
- Broadcasters use FS to provide network relay programming and to provide auxiliary microwave stations for video and audio "back hauls" (support news gathering and other broadcast operations). They also will use FS to support High Definition Television ("HDTV") deployment.
- ♦ Conventional and wireless cable TV operators distribute programming and new information services.
- Railroads control transportation activities.

These critical services support the national telecommunications infrastructure. They must have room to expand. Despite their importance, especially as the platform for emerging wireless technologies, FS users have been treated as a stepchild when compared to other technologies. Adoption of the proposals made herein will reverse this unfortunate trend of neglecting FS needs and will promote their necessary expansion.

B. Part 101 Must Be Updated To Ensure That The Commission's Goals Continue To Be Satisfied.

When the Commission established Part 101, it declared that:

[T]he new consolidated Part 101 [will] result in a number of major benefits. First, the public [will] benefit from simplified and streamlined rules. Second, both the public and the Commission [will] benefit from reduced regulatory burdens. Third, the proposed rules [will] encourage more efficient use of the microwave spectrum by permitting more intensive use of microwave equipment. Fourth, common technical standards for common carrier and private operational fixed microwave equipment [will] lead to economies of scale in microwave equipment production and lower equipment prices to licensees. Moreover, private and common carrier microwave systems are often technically and operationally similar, but are now subject to

differing regulation depending on whether an applicant files under Part 94 or Part 21 of the Commission's rules. The new consolidated Part 101 will eliminate this arbitrary distinction and further regulatory symmetry between common carrier and private operational fixed microwave services.¹⁰

Although many of these goals have been achieved, certain problems still remain to be addressed. Updating and restructuring the 23 GHz Band, so it is more efficient and more accessible to FS users, must be accomplished. As demonstrated herein, the TIA Fixed Section's proposed rules accomplish this objective and therefore must be adopted.

II. CONDITIONAL AUTHORIZATION IN THE 23 GHz BAND MUST BE PERMITTED

Pursuant to Section 101.31(e) of its Rules, the Commission has imposed an overly broad restriction upon conditional licensing in the 23 GHz Band. This restriction allows 23 GHz Band conditional licensing only for operations with an Effective

¹⁰Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services, Report and Order, 11 FCC Rcd 13449, 13452-53 (1996) ("Part 101 Order"). In fact, many of the rules adopted in the Part 101 Order were based upon suggestions originally made by the TIA Fixed Section and the National Spectrum Managers Association ("NSMA").

¹¹On June 27, 1996, the TIA Fixed Section and NSMA jointly filed a Petition for Reconsideration of the <u>Part 101 Order</u>. In this Petition for Reconsideration, the TIA Fixed Section and NSMA requested that the Commission re-evaluate its decisions regarding: (i) the POFS application 30-day Public Notice period; (ii) consolidation of FS application forms; (iii) 10 GHz Band conditional licensing; (iv) ATPC data in a PCN; (v) grandfathering provisions; and (vi) minimum channel loading requirements for analog systems with a bandwidth of 10 MHz or greater. The Commission has not yet ruled on this Petition for Reconsideration. With the exception of the 10 GHz Band conditional licensing issue, which has been resolved in the <u>10 GHz Band Order</u>, the TIA Fixed Section respectfully requests that the Commission proceed expeditiously on the issues raised in the Petition for Reconsideration.

Radiated Power ("ERP") level at or below 55 dBm. Indeed, this restriction on 23 GHz Band conditional licensing substantially has thwarted necessary deployment of FS facilities. Thus, the Commission must adopt rules to make the 23 GHz Band more readily available for FS users.

A. Conditional Licensing In The 23 GHz Band Is Necessary.

Increasing access to, and quick deployment in, the 23 GHz Band is essential.

Thus, the TIA Fixed Section proposes that the Commission:

- ♦ Adopt 23 GHz Band conditional licensing (except in specifically identified federal government protected areas).
- ♦ Adopt frequency coordination procedures specifically applicable to the non-government/government shared 23 GHz Band.

Indeed, the rationale supporting the recent decision to permit 10 GHz Band conditional licensing applies with equal force to the 23 GHz Band. Such conditional licensing is appropriate because "the public interest will be served by permitting microwave licensees . . . to avail themselves of conditional authorization authority at the earliest opportunity . . . [because it] will allow for more rapid delivery of . . . microwave services to the marketplace." Both the Commission and NTIA recognize this need and have announced their intention to address 23 GHz Band conditional

¹²Most FS systems require power levels greater than the 55 dBm limit due to the difficult radio propagation conditions inherent in the 23 GHz Band.

¹³10 GHz Band Order, at \P 6.

licensing in the future.¹⁴ For the reasons set forth below, now is the time for such action.

B. The Commission's Limitation On 23 GHz Band Conditional Licensing Is Unjustifiably Excessive.

In the <u>Part 101 Order</u>, the Commission generally permitted conditional licensing for FS users. Under this conditional licensing procedure, "an applicant will be allowed to operate while its formal license application(s) is being processed" if it certifies that certain conditions have been satisfied.¹⁵

Inexplicably, the Commission did not permit conditional licensing in all FS bands. Instead, it restricted, without explanation, the availability of such a useful spectrum management tool for FS operations in the 23 GHz Band, which is shared between federal government and non-government users.¹⁶ Specifically, the Commission

¹⁴<u>ld.</u> at ¶ 4 n.7.

¹⁵Part 101 Order, 11 FCC Rcd at 13462. Under this decision, an applicant using conditional licensing must certify: (1) that it successfully has completed the frequency coordination process; and (2) that the contemplated operation will not significantly impact the environment, will not require a waiver or authorization to operate within the set limits of a Quiet Zone, will not require FAA notification, and will be limited to point-to-point transmissions in the 4, 6, 11, and 18 GHz bands, as well as in other portions of the 10 GHz Band and 23 GHz Band. 47 C.F.R. § 101.31(e) (1998). Restrictions on 10 GHz Band conditional licensing now fortunately have been eliminated in the 10 GHz Band Order.

¹⁶These bands must be frequency coordinated through IRAC's Frequency Assignment Subcommittee ("FAS"). Manual of Regulations and Procedures for Federal Radio Frequency Management, Chapter 8: Procedures and Principles for the Assignment and Coordination of Frequencies at 8.1.1, http://www.ntia.doc.gov (as of October 23, 1997) ("NTIA Red Book").

prohibited conditional licensing in the 23 GHz Band for operations with an ERP greater than 55 dBm.¹⁷

Absent conditional licensing, operation can not commence until authorization grant. License approvals for operations in bands shared with government users, unfortunately, can take up to four (4) months. This extended "waiting period" is unacceptable. Pressure abounds in the highly competitive telecommunications marketplace, especially among wireless service providers, to commence service quickly so that cash flow can be generated and market share can be increased. Any processing delays in this environment are unacceptable, especially when a viable solution exists, such as conditional licensing.

C. The TIA Fixed Section's Proposed Government/Non-Government Frequency Coordination Procedures Must Be Adopted For 23 GHz Band Conditional Licensing.

The TIA Fixed Section acknowledges that government operations in the 23 GHz Band must be protected. Nevertheless, private sector FS users need to deploy quickly. Procedures exist that promote rapid coordination between non-government users, but they do not exist for coordination between non-government and government users.¹⁸

¹⁷47 C.F.R. § 101.31(e)(vi) (1998).

¹⁸Under Section 101.103(d), commercial frequency coordinators are expected to work out potential interference problems. 47 C.F.R. § 101.103(d) (1998). This procedure currently is used between point-to-point and satellite coordinators in the shared non-government bands subject to Parts 25, 74, 78, and 101. A similar procedure is used in the federal government bands between different agency coordinators prior to submission of frequencies to NTIA and to IRAC's FAS.

Instead, Commission/NTIA coordination procedures take too long and thus deter use of shared bands.

Expediting non-government/government frequency coordination is essential to successful 23 GHz Band conditional licensing.¹⁹ Without these procedures, the delays that the TIA Fixed Section seeks to eliminate will persist.

Circular protection areas around sensitive military and agency facilities, where conditional licensing will not be allowed, must be designated.²⁰ Outside these protected areas, licensees should prior coordinate 23 GHz Band frequencies with federal government agencies under Section 101.103(d) procedures. To initiate the process, under the approach proposed herein, a commercial frequency coordinator would send a PCN to IRAC.

The government agencies, through IRAC, would be allowed the same thirty (30) day period that applies to the private sector for examining the application and for notifying the commercial frequency coordinator of potential interference problems.²¹

¹⁹Appendix A at Section 3.

²⁰Area boundaries would be defined along a center point of latitude and longitude listed in the revised Section 101.31. These areas should be large enough to obscure the exact location of the Government transmitter station, as well as to protect against harmful interference. This approach is not unprecedented. The Commission has designated protection areas around Government earth stations in the 17.8-19.7 GHz band. Amendment of the Commission's Rules to Relocate the Digital Electronic Message Service From the 18 GHz Band to the 24 GHz Band and to Allocate the 24 GHz Band for Fixed Service, Order, ET Docket No. 97-99, FCC 97-348, at ¶ 3 (1997); 47 C.F.R. § 74.32 (1998).

²¹The TIA Fixed Section proposes amending Section 101.103 to incorporate these proposed coordination procedures. The TIA Fixed Section has discussed these

IRAC would have 30 days to respond to the PCN; if no response is made, coordination will be deemed to have been completed. An application then could be submitted to the Commission and operation could commence. Similarly, if interference problems were identified, but were resolved between the commercial and government frequency coordinators during the 30-day PCN period, the 23 GHz Band system operator would submit a license application to the Commission and begin operation pursuant to the Section 101.31(e) conditional licensing provisions. Should the interference problems remain after the 30-day period, conditional licensing would not be permitted and an operator would have to select alternative frequencies or it would have to request resolution of the problem through the formal licensing process.

D. Section 101.31 Must Be Amended To Permit Conditional Licensing In The 23 GHz Band.

Availability of short-haul FS spectrum is becoming an increasingly critical problem. Rapid proliferation of, and expected continued escalating demand for, these short hops is occurring because they support such applications as wireless technologies in urban areas, alternative local telephone service and Internet access. Taking action to make the 23 GHz Band, which is appropriate for short-haul applications, more accessible for FS users thus is in the public interest. The best way

coordination procedures with senior NTIA staff and recognizes the utility of using IRAC as a clearing house for all the government/non-government PCNs. However, as an alternative to sending the PCNs to IRAC, the TIA Fixed Section recommends that the individual PCN could be sent to each affected government agency directly.

to accomplish this necessary objective is to permit unrestricted conditional licensing in the 23 GHz Band.

There are no costs associated with this proposed expansion of conditional licensing for the 23 GHz Band. However, the benefits are plentiful. Not only will the proposed change help to relieve congestion and relocation difficulties of FS operators, but it also will allow them to avoid the undue delays experienced with the application process in this band without compromising government operations.

The Commission and NTIA promptly must reach an agreement regarding coordination of the 23 GHz Band consistent with the TIA Fixed Section's proposals made herein. To implement these proposals, Section 101.31(e) must be amended so that unrestricted 23 GHz Band conditional licensing would be available and Section 101.103 must be amended so that coordination with federal government agencies could be expedited.²²

III. THE COMMISSION SHOULD MAKE THE 23 GHz BAND MORE ACCESSIBLE TO FS USERS

The 23 GHz Band is for short-haul FS operations. However, certain shortcomings exist, in addition to the conditional licensing restriction addressed above, that prevent full exploitation of this band. A formal channel plan has not been

²²At this time, the TIA Fixed Section's proposed government/non-government frequency coordination procedures for the 23 GHz Band would not apply to the 10 GHz Band because it is not allocated for government fixed use. Nevertheless, the TIA Fixed Section reserves the right to request that the Commission and NTIA apply these frequency coordination procedures to 10 GHz Band conditional licensing if circumstances warrant (i.e., if NTIA ever requests excessively large protected areas or if the 10 GHz Band is allocated for co-primary government FS operations).

incorporated into the rules and other rules fail to encourage efficient spectrum utilization. To support more intensive use of the 23 GHz Band, the TIA Fixed Section recommends inclusion of a frequency plan in the rules, as well as modifications in frequency tolerance and spectrum efficiency criteria, low-power, limited coverage rules, and antenna standards.²³

A. The Commission Should Adopt The TIA Fixed Section's Proposed Frequency Plan.

There is no 23 GHz Band channel plan specified in the Commission's Rules. Rather, industry has developed a plan based upon 50 MHz channels.²⁴ The Commission can contribute to making the 23 GHz Band more efficient and thus more attractive for short-haul FS users by including a channel plan in its rules, such as the one proposed herein.

²³The new rules adopted in response to this Petition would become effective and thus could be used immediately on the effective date established by the Commission (the "Effective Date"). Nevertheless, the TIA Fixed Section recognizes the need to minimize any adverse impact that those new rules would have on licensees of existing systems and on equipment manufacturers once they do become effective. Thus, it proposes that the Commission establish an 18-month transition period from the Effective Date before manufacturers would be required to meet applicable new frequency tolerance, spectrum efficiency, or other standards revised hereunder. In addition, within 24 months after the Effective Date, users would be required to meet those new technical requirements for new installations. The proposed new antenna standards would be effective on the Effective Date. Under this 24-month transition procedure, FS stations applied for or licensed by the end of the transition period would be grandfathered indefinitely under the current rules, provided that these systems do not cause harmful interference to other licensees.

²⁴The channelization in Section 101.147(s) reflects this standard.

The proposed plan is based upon the current industry standard 50 MHz channel plan.²⁵ However, given the availability of more spectrally efficient digital FS radios, this plan includes narrow and wideband channels to provide flexibility and to increase the number of potential users.

Specifically, the TIA Fixed Section's 23 GHz Band plan consists of 24 pairs of 50 MHz channels.²⁶ Each 50 MHz channel is subdivided into wideband channels (<u>i.e.</u>, one 40 MHz channel, one 30 MHz channel, two 20 MHz channels and five 10 MHz channels) and into narrowband channels (<u>i.e.</u>, ten 5 MHz channels and twenty 2.5 MHz channels).

Flexibility characterizes this proposed 23 GHz Band plan. The center 10 MHz channel in each 50 MHz block would have the same frequency as the associated 50 MHz channel. This configuration would permit upgrades in channel capacity without a frequency change. Similarly, under this plan, traffic upgrades could be performed from a 10 MHz channel to a 30 MHz channel. Spectrum efficiency would be enhanced

²⁵Appendix A at Section 4.

²⁶A maximum authorized bandwidth of 100 MHz is specified for the 23 GHz Band. To be consistent with the proposed 23 GHz Band frequency plan, which defines channels up to 50 MHz in bandwidth, the TIA Fixed Section proposes reducing the maximum bandwidth from 100 MHz to 50 MHz. The maximum bandwidth in the 38.6-40.0 GHz band (the "38 GHz Band") is also 50 MHz. Establishing the same 50 MHz maximum bandwidth in the 23 GHz Band and in the 38 GHz Band would allow radio manufacturers to use common hardware in the two bands, thereby increasing economies of scale and reducing costs for the microwave operator. A search of the emission designators in the Commission's license data base identified no existing systems licensed for more than 50 MHz of bandwidth in the 23 GHz Band. Therefore, no grandfathering provision for 100 MHz bandwidth channels is included in the TIA Fixed Section's proposed revisions to Section 101.109(c).

because the plan avoids the need to use 50 MHz channels for all needs above 20 MHz. Furthermore, no overlap would be created between the existing 50 MHz channels and the new channels, allowing for an orderly transition to the new plan without causing interference to existing systems.²⁷

Several portions of the 23 GHz Band also would be reserved for narrowband channels (i.e., 2.5 and 5 MHz bandwidth channels). These portions of the band can be used for wideband traffic (i.e., 10-50 MHz bandwidth), but only if all other wideband channels are blocked.²⁸

B. Frequency Tolerance Specifications For The 23 GHz Band Should Be Tightened.

In Section 101.107(a), the Commission specifies the frequency tolerance for the 23 GHz Band at 0.03%. This specification is anachronistic because it was adopted when most 23 GHz Band radios used analog modulation techniques and were coordinated for the full 50 MHz channel bandwidth.

²⁷In Section 101.147(a), the Commission, in its Table of Frequency Assignments, reserves half the 23 GHz Band for CC users and half for POFS users. This partition must be eliminated so that all users share the entire band equally. This change would prevent excessive congestion in part of the band and promote more efficient use of the spectrum. Section 101.803(a) also should be amended to reflect that the frequency band is shared with the CC and POFS users. Exhibit A at Section 10.1.

²⁸The frequencies selected for narrowband channels are the highest numbered channels in the CC and POFS segments of the 23 GHz Band. Since frequency planners tend to select the lowest numbered frequencies first, these channels should be the least congested frequencies in the band.

Today, most licensed radios are digital and occupy 75% or more of the channel bandwidth. For these digital radios, the 0.03% frequency tolerance specification would cause excessive frequency drift into adjacent channels when the band is divided into 50, 40, 30, 20, 10, 5, and 2.5 MHz narrowband channels. This inefficient operation would be unacceptable and would frustrate the intended increased use of the 23 GHz Band.

Radios for various FS bands typically use common components. The 18 GHz Band is divided into narrowband channels comparable to the proposed plan for the 23 GHz Band, and digital radios for the 18 GHz Band are designed to meet a 0.001% frequency tolerance. If the same 0.001% frequency tolerance standard is applied to the 23 GHz Band, it would be easier for new short-haul users to access this band without incurring unnecessary equipment costs. Thus, the TIA Fixed Section recommends tightening the frequency tolerance specification for digital 23 GHz Band radios to 0.001%.²⁹

C. Spectrum Efficiency Requirements Should Be Implemented.

There are no spectrum efficiency requirements for the 23 GHz Band. Efficient band utilization is jeopardized without such criteria.

Demand will be extensive for very high bit rate 23 GHz Band applications, carrying up to 155 megabits per second of data traffic. These systems will carry high speed Local Area Network traffic between buildings on a university or corporate

²⁹Appendix A at Section 5.